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ABSTRACT

It was hypothesized that a middle school organization embracing grades 5-8 would overcome certain inadequacies of a typical elementary and junior high school organization and would better cope with the social and educational needs of older children, preadolescents, and early adolescents aged 10-14. Regarding data collection, measurement techniques, testing concerns, statistical methods, followup studies, attendance figures, teacher attitudes, etc., 19 ways were formulated to test the hypothesis. It was suggested that the middle school evaluator should first find out whether the school is operating as a middle school. Then the decision should be made as to how much of the operation he has the resources to evaluate. It should be remembered that good sampling will save time and money and will secure further cooperation from those being evaluated while providing useful data. Finally measures should be gathered over time, sufficient time for the middle schools to have any impact, and particularly sufficient time to see what happens to middle school pupils when they proceed to the next level. (Author/RC)

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SUGGESTED EVALUATION APPROACHES

By

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More than a decade ago, Cronbach wrote, "Since group comparisons give equivocal results, I believe that a formal study should be designed primarily to determine the post-course performance of a well-described group with respect to many important objectives and side effects."[1] I do not propose today to duplicate the many excellent books, articles, and monographs on evaluation, to create a fresh acronym, or to present a diagram of Rube Goldberg complexity, some of which have moved my colleague, Dr. Robert Soar to comment, "There is less here than meets the eye." Instead, I would like to look back at some studies which have been done and to a proposal which Dr. Alexander and I made to the USOE for middle-school evaluation which was never funded to get suggestions for evaluating the middle school which might be consonant with Cronbach's recommendation.

From 1917 to 1921 the late Ellsworth Collings ran an experiment with a project curriculum in a rural McDonald County, Missouri school.[2] The design would now be called "quasi-experimental." Forty pupils from the experimental school were matched with an equal number from two control schools operated conventionally. Over the four-year period 68 comparisons were made on achievement, with all 68 favoring the experimental school. To compare attitudes toward school, Collings gathered data on percent of pupils in the districts enrolled, percent attending daily, percent tardy, percent truant, percent enrolling and remaining the entire year, percent completing eighth grade, and percent entering high school. Shift in parent attitudes and behavior were compared from 1917-18 to 1920-21. Data gathered included school visits, violation of compulsory school laws, support of a consolidated rural high school, use of school apparatus for testing milk and seed, and use of the school library.

Another basis of comparison was changes in out-of-school activities of pupils in the experimental and control schools. These included books read, proportion of pupils reading daily newspapers in the home, proportion of children taking instrumental music lessons, proportion participating in community activities, proportion carrying on home projects during vacations, proportion reading magazines at home, proportion practicing ordinary health habits, reduced incidence of common diseases, proportion of children participating in parties and games in homes, and proportion of children saving ten or more dollars from earnings during the school vacation.

Parent activities were also studied. These included reading farm journals, daily reading of newspapers, attendance at night community meetings, participation in community activities, testing dairy cows, testing seed corn, shifting

to thoroughbred cattle and poultry, change in incidence of disease. Also studied were changes in ordinary community conveniences. These included subscriptions to papers, farm journals and magazines, screening, yard beautification, home playground and apparatus, modern conveniences in the home, and increase in musical instruments in the home.

In addition Collings collected data from 120 teachers who visited the experimental school on how they felt about what they saw and whether they tried the practices in their own schools.

It should be noted that the experiment ran for four years. Usually, Collings compared changes in the two schools in percents. Today we would probably use analysis of variance, sometimes of covariance, chi-square, and other more rigorous procedures. However, one can apply a sign test to his data, and the odds against the number of differences favoring the experimental school by chance are truly astronomical--something less than one in a sextillion for achievement, alone.

Of even greater value would have been finding out what happened to the "100 percent" of the eighth graders who went on to high school, and even further, what happened in the years after they left high school? Were they identifiably different from pupils who had gone through conventional, subject centered rural schools?

Two other studies from the writer's grab-bag, one small and one large, are highly suggestive for the person who is planning evaluation in the middle school. One is Harold Fawcett's The Nature of Proof.[3] The other is The Story of the Eight-Year Study. Fawcett attempted to teach plane geometry in such a way that the logic of deduction, learned in a prejudice-free area, could be deliberately applied to other areas to improve the quality of pupil thinking. He used a variety of evaluative devices, including tests of knowledge of geometry, but also tests of critical thinking, reports of graduate students and visitors to his classes in the Ohio State Laboratory School, anecdotal material collected from formal and informal parent conferences, reports from other teachers, judgments by teachers in other areas of essays written on the nature of proof, and anecdotal and interview material from the pupils. Much of what Fawcett did might be categorized as a "one-shot case study," yet his model of using a wide variety of sources for gathering data, all of which seemed to point in the same direction--that pupils were using deductive thinking more effectively in many out-of-class situations--is suggestive to the person who must evaluate an on-going enterprise where he had no chance to participate from the beginning.

The Eight-Year Study followed graduates of 30 innovative high schools into college and compared their performance with a group tediously matched who were graduates of conventional secondary schools. This would exemplify Cronbach's call for post-course performance of a well described group. The study would be at best associational, and has been criticized because matching was used. However, in terms of academic achievement and student activities, the experimental group exceeded their matchees in almost every comparison except foreign language achievement and participation in campus religious activities. The graduates of the most radically different schools had wider margins over their matchees than did those from the moderately innovative schools. This

study was well financed and had the talents of such distinguished persons as Ralph Tyler conducting the study. It also ran for a suitable long time. As a basis for decision making that "progressive" education worked in the high school and should therefore be continued and be extended, the study was almost ideal. Unfortunately, the results were largely neglected and had little impact on the subsequent history of American secondary education. Nevertheless, the middle-school evaluator might still be rewarded by looking back at the Eight Year Study.

Dr. Alexander and I were encouraged to expand a rather modest middle-school evaluation proposal into one which would run for nine years. We had secured the cooperation of school systems in Montgomery County, Maryland, Dade County (Miami, Florida, and Atlanta, Georgia. All three were just beginning to move toward middle schools. There was even a fair chance that we could have had random assignment of pupils to experimental middle schools and conventional elementary and junior high schools.

We hypothesized that a middle school organization embracing grades 5 through 8 would overcome certain inadequacies of a typical elementary and junior high school organization and would better cope with the social and educational needs of older children, preadolescents, and early adolescents from 10 to 14. We also felt that there would be a concomitant impact on teachers and parents which might be measurable or observable. We proposed testing the following hypotheses in the following ways: (Throughout we expected to do much sampling for data gathering.)

1. Pupils in the middle school will become more self-directed learners than pupils in the control schools.

   Data would be collected by interview, observation, and case studies. It would be expected that independent study would be used in a greater variety of ways, by a higher proportion of teachers, and involving a higher proportion of students. It would be expected that more time would be spent in libraries, science laboratories, language laboratories, etc., and somewhat less time in group instruction in classes for the pupils in the middle school. The activities carried on by pupils would be cooperatively planned and tailored to the individual pupil and he would be responsible for the effective use of large blocks of time with a minimum of supervision.

2. Pupils in the middle school will have fewer and/or less intense social and psychological problems than pupils in conventional schools.

   Records will be kept of referrals and diagnoses of problem cases. The school systems listed have school psychologists and school social workers to deal with cases. Data would be kept at all times. In addition, random samples of pupils (stratified by sex and grade level) would be drawn each year and given tests such as the Rorschach, Thematic Apperception Test, Combs Picture Story Test, or other projective instruments. These could be analyzed for indications of psychological problems.

3. Achievement of middle school pupils on standardized tests will equal or exceed that of pupils in conventional schools.

   Pupils would be tested at the same time of year. Group tests of mental ability would also be used. If significant differences were found in mental age, chronological age, or social-class background between pupils in the experimental and control schools, analysis of variance and covariance would be used to test the hypotheses.

4. Middle school pupils will achieve as well as or better on standard measures of physical fitness and health as pupils in conventional schools.

   Tests would be selected and used as in (3), except that analysis of variance or t-tests would probably be used. Suggested tests would be the AAHPER Youth Fitness Test and the Health Behavior Inventory.

5. Pupils in the middle school will hold more favorable attitudes toward school and schooling than will pupils in conventional schools.

   The Battle Scale, developed by Jean A. Battle during the Kellogg Leadership Study at the University of Florida, a 60-item test, will be given to pupils. It has been widely used in grades 5 through 11.

6. Middle school pupils will hold more adequate self-concepts than will pupils in the conventional schools.

   Projective techniques will be used with random samples of pupils from the experimental and control schools. Samples of 10 per cent will be drawn, stratified by sex and grade level, using tables of random numbers. Care will be taken to avoid "self-report" instruments.
   Data will be gathered annually and will be treated by analysis of variance.

7. Social acceptance among middle school pupils will be higher than among those in conventional schools.

   The Ohio Social Acceptance Scale will be used to test this hypothesis. Pupils get composite scores by all classmates by sex.

8. The average daily attendance record of middle school pupils will excel that of pupils in conventional schools.

   Since participation in the state distribution of funds depends upon meticulous keeping of ADA records, this information will be available by grade level for all schools and can be tested for differences in percents or proportions. Comparisons will be made at the end of each year.

9. Measures of creativity among middle school pupils will show an increase rather than a decrease during middle school years.

   Measures of creativity tend to decrease during the middle school years. It is believed that creativity as measured will remain constant or increase. It can be tested in experimental and control schools with a test such as the Guilford tests of creativity or Torrance's adaptation when more suitable for younger age groups.

10. Middle school graduates will compile better academic and social records in the ninth grade than will ninth-graders from the control schools.

    This will involve follow-up studies in the ninth grades, preferably in the same schools, of pupils who have had one year, two years, three years, and four years, if time permits, in the experimental school. Academic records will be determined by grades obtained in required courses and comparisons made through analysis of variance. Records of acceptance by peers will be measured by a test such as the Ohio Social Acceptance Scale and also by checks of participation and leadership in nonclass activities such as clubs, dramatics, journalism, and the like. Frequency of membership and office held or committee memberships and chairmanships will be studied.

11. Middle school graduates will drop out less frequently from senior high school than will pupils who follow the traditional pattern.

    School laws ordinarily require that reasons why pupils leave school before graduation be categorized and recorded. The proportions in categories could be compared between students from the middle schools and those from the control schools.

12. Middle school teachers will more often use practices which experts generally recommend as superior.

    The Mathews Teacher Activity Questionnaire is a 90-item scale developed and used in the Florida-Kellogg Leadership Project. It covers teacher activities with pupils, other teachers, principals and supervisors, as members of professional organizations, with parents and for professional growth.

13. Teachers in the middle school will experience a higher degree of professional and self-satisfaction than teachers in conventional schools.

    A number of instruments could be used here. One would be The Organization Climate Description Questionnaire, developed by Halpin and Croft. Miles has developed several instruments which might be used including How It Feels Here, Do's and Dont's, System Analysis Questionnaire and Problem Analysis Questionnaire. Still another one which has been widely used in the Florida Leadership Studies is Walker's Teacher Human Relations Scale, an instrument designed to assess a teacher's satisfaction with the human relations aspects of his present job.

14. Teachers in the middle school will utilize a greater variety of learning media than will teachers in conventional schools.

Records of the media departments would be studied for frequency and variety of use. It would be necessary to see that in general, both experimental and control schools had equal access to the various media. This information would be collected each year during several one-week periods selected randomly.

15. Teacher turnover will be less in the middle school than in conventional schools.

Records would be kept for the period of the study beginning the third year. It is anticipated that the middle school would have a career appeal which now is found in elementary and high schools but which is often lacking in the junior high where teachers are eager to move up or down. Hence it is felt that the hypothesis would be supported though care would need to be exercised in equating other variables such as age and experience between the experimental and control groups.

16. Teachers in the middle school will be more open to change.

This can be studied with Duncan's Curriculum Improvement Measure which has satisfactory validity and reliability to compare groups of the size of the faculties in the study.

17. Teacher absences will be less frequent than in conventional schools.

School records will be the source of data here. Comparisons will be made annually by sex and by age groups between schools.

18. Patrons of the middle school will hold more positive attitudes toward objectives and procedures of the school than patrons of conventional schools.

The Parent Attitude Scale, developed at the University of Florida, or suitable modification of it can be used to assess this. It has been used with more than 10,000 parents in more than 100 schools in studies made at the University of Florida over the past decade. It has also been widely used in other states, including a state-wide study in Alabama.

19. Principals of experimental and control schools will have similar operating patterns within each school system.

Differences have been found among some schools on some of the hypotheses to be tested in the present study which are concomitants of different operating patterns or styles of school principals or different organizational climates within the school principals. While the present study is not concerned with leadership style as such, the behavior of the principals might

be an explanation of contrary results between or among different school systems. A number of instruments have been developed to get this kind of data including the Principal Behavior Check List from the University of Florida, the Leader Behavior Description Questionnaire by Ohio State, the Halpin and Croft instrument mentioned in (13), and the Executive Professional Leadership Scale from Harvard. While sample size would probably be too small for significance of differences, this would be useful information in case studies of each school. Information would be collected the second, third, and alternate years, in the spring.

Still another source which should not be skipped is observation. Is the middle school doing differentthings from the traditional elementary or junior high school? Observation might be either highly structured, using one of the many appropriate systems available or it might be unstructured. Recently I visited the Martin Luther King Middle School in Atlanta. Within five minutes the visitor could see that things were different and that they were working. More than a hundred pupils were working on a variety of tasks, most of them highly self-directing. Teachers were there to help as needed. A twelve-year old boy was tailoring a sports jacket with great skill. Other boys and girls were engaged in other home economics activities. Elsewhere pupils were working on mathematics, language arts, reading, social studies, science, and even typewriters and calculators.

This particular group was housed in a structure designed to fit a program. The program was in its third year of operation with all kinds of resources and support personnel. It had been planned.

This program started in an inner-city school where part of the pupils were randomly assigned to DICEP. Other pupils took part in a less planned program. At the end of the second year the research assistant in charge of evaluation could report:

> During 1972-73, the DICEP pupils scored higher than did the control pupils on two criterion referenced tests; the DICEP pupils had a more positive rating about themselves, other pupils, teachers, school administrators, and the school as a whole than did the control pupils on The Student Attitude Scale; the teachers of the DICEP pupils rated them more positively than did the teachers of the control group, statistically significant at the .01 level, on the Florida Key; 84 percent of the teachers' responses about DICEP were positive on the Teacher's Evaluation Scale; there was an average positive response of 75 percent from pupils about DICEP on the Student Evaluation Scale; and five of the six offices of student government were filled by DICEP pupils, although DICEP pupils comprised less than one-fourth of the pupil population.

In looking to the more recent past, I would change little in rewriting the chapter on "Evaluating the Middle School" in The Emergent Middle School.[5] The paradigm on multiple criterion measures in evaluation of school programs which Metfessel and Michael originally presented as an AERA paper in 1967 is reprinted in Worthen and Sanders' Educational Evaluation: Theory and Practice.[6] It contains unusually comprehensive suggestions for all kinds of criterion measures.

In summary, the middle school evaluator should first find out whether the school is operating as a middle school. Then he should decide how much of the operation he has the resources to evaluate. He should remember that good sampling will save time, money, and secure further cooperation from those being evaluated while providing useful data. Finally, he should gather measures over time, sufficient time for the middle school to have an impact, and particularly sufficient time to see what happens to middle school pupils when they go on to the next level.

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